

Alg. 2 Warm Up #9-2

1. Find the x-intercepts for the graph of:

$$y - x^2 = 6x$$

2. Describe how the graph of $y + 3 = -2(x + 1)^2$

is different from $y = x^2$

3. Determine if the function is odd, even or neither:

a. $y = 3x^3$

b. $y = x^2 + 16$

c. $y = \frac{x^4}{2}$

HW Questions:

Review & Preview

3-23. Decide whether each of the following pairs of expressions are equivalent for all values of x (or a and b). If they are equivalent, show how you can be sure. If they are not, justify your reasoning completely.

a. $(x+3)^2$ and $x^2 + 9$

b. $(x+4)^2$ and $x^2 + 8x + 16$

c. $(x+1)(2x-3)$ and $2x^2 - x - 3$

d. $3(x-4)^2 + 2$ and $3x^2 - 24x + 50$

e. $(x^3)^4$ and x^7

f. ab^2 and a^2b^2

3-24. Look back at the expressions in problem 3-23 that are not equivalent. For each pair of expressions, are there any values of the variable(s) that would make the two expressions equal? Justify your reasoning.

x^{12} x^7

for $x=0 \rightarrow 0^{12} = 0^7$

for $x=1 \rightarrow 1^{12} = 1^7$

3-25. Jenna wants to solve the equation $2000x - 4000 = 8000$.

- a. What easier equation could she solve instead that would give her the same solution? (In other words, what equivalent equation has easier numbers to work with?)

$$2x - 4 = 8$$

- b. Justify that your equation in part (a) is equivalent to $2000x - 4000 = 8000$ by showing that they have the same solution.

- c. Now Jenna wants to solve $\frac{3}{50} - \frac{x}{50} = \frac{7}{50}$. Write and solve an equivalent equation with easier numbers that would give her the same answer.

$$3 - x = 7$$

3-27. For the function $h(x) = -3x^2 - 11x + 4$, find the value of $h(x)$ for each value of x given below.

- a. $h(0)$ b. $h(2)$ c. $h(-1)$ d. $h(\frac{1}{2})$

- e. For what value(s) of x does $h(x) = 0$?

output is 0

$$(-1)0 = (-3x^2 - 11x + 4)(-1)$$

$$0 = 3x^2 + 11x - 4$$

$$(3x - 1)(x + 4)$$

$$\begin{array}{l} 1 \cdot 4 \\ 2 \cdot 2 \end{array}$$

$$\begin{array}{r} 12x \\ -1x \\ \hline +11x \end{array}$$

3-29. Multiply each pair of polynomial functions below to find an expression for $f(x) \cdot g(x)$.

a. $f(x) = 2x$, $g(x) = (x + 3)$

c. $f(x) = (2x + 1)$, $g(x) = (x - 3)$

$$2x(x + 3)$$

b. $f(x) = (x + 3)$, $g(x) = (x - 5)$

d. $f(x) = (x + 3)$, $g(x) = (x + 3)$

$$f(x) \cdot g(x)$$

$$(x + 3)(x - 5)$$

3-32. Simplify each of the following expressions, leaving only positive exponents in your answer.

a. $(x^3y^{-2})^{-4}$

b. $-3x^2(6xy - 2x^3y^2z)$

$$-3 \cdot x^2 \cdot 6 \cdot x \cdot y + (-3)(-2) \cdot x^2 \cdot x^3 \cdot y^2 z$$

$$-3 \cdot 6 \cdot x^2 \cdot x \cdot y + 6x^3y^2z$$

$$-18x^3y + 6x^3y^2z$$

3-35. Give the equation of each circle below in graphing form.

- A circle with radius of 12 centered at the point $(-2, 13)$.
- A circle with center $(-1, -4)$ and radius 1.
- A circle with equation $x^2 + y^2 - 6x + 16y + 57 = 0$. (Hint: Complete the square for both x and y .)

$$(x-h)^2 + (y-k)^2 = r^2$$

$$x^2 - 6x + \underline{9} + y^2 + 16y + \underline{64} = -57 + \underline{9}$$

$$(x-3)^2 + (y+8)^2 = 16 + \underline{64}$$

$$(3, -8) \text{ center. } \rightarrow r = 4$$

Friday's CP's: (Pink)

$$20a) (3xy^2)^2 - (z^3)^2 = 9x^2y^4 - z^6$$

$$(3xy^2 + z^3)(3xy^2 - z^3) \quad \begin{aligned} U &= 3xy^2 \\ V &= z^3 \end{aligned}$$

Friday's CP's: (Pink)

Share your ideas from Friday's classwork with your team. 5 minutes, then move on to today's.

CP's: 3- # 37 - 38 (Purple)

3.1.3 How can I solve it?

Solving by Rewriting



In the past few lessons, you have worked on recognizing and finding equivalent expressions. In this lesson, you will apply these ideas to solve equations. As you work, use the questions below to keep your team's discussion productive and focused.

How can we make it simpler?

Does anyone see another way?

How can we be sure the equations are equivalent?

3-37. Graciela was trying to solve the quadratic equation $x^2 + 2.5x - 1.5 = 0$. "I think I need to use the *Quadratic Formula* because of the decimals," she told Walter. Walter replied, "I'm sure there's another way! Can't we rewrite this equation so there aren't any decimals?"

- What is Walter talking about? Rewrite the equation so that it has no decimals.
- Rewrite your equation again, this time expressing it as a product.
- Now solve your new equation. Be sure to check your solution(s) using Graciela's original equation.

3-38. SOLVING BY REWRITING

Rewriting $x^2 + 2.5x - 1.5 = 0$ in problem 3-37 gave you a new, equivalent equation that was much easier to solve. With your team, find an equivalent equation or system that you think might be easier to solve for parts (a) through (f) below. Then solve your new equation or system and check your answer(s) using the original equations.

a. $100x^2 + 100x = 2000$

b. $15x + 10y = -20$
 $7x - 2y = 24$

c. $\frac{1}{3}x^2 + \frac{x}{2} - \frac{1}{3} = 0$

d. $\frac{4}{x^2} + \frac{12}{x} + 9 = 0$

e. $\frac{x-3}{x} + \frac{2}{x-1} = \frac{5-x}{x}$

f. $\frac{\sqrt{x^2-15x}}{2y} = 5$
 $3\sqrt{x^2-15x} - 3y = 27$

HW: 3-

45 ---> 50

Short quiz Thursday:
factor completely(GCF: greatest common factor
& difference of squares)

simplify exponents